

SHS-11

December 13, 1989

Peter Vagt, Project Coordinator  
Warzyn Engineering Inc.  
2100 Corporate Drive  
Addison, Illinois 60101

RE: Phase II Work Plan Addendum  
American Chemical Services NPL Site

Dear Dr. Vagt:

I have reviewed the Phase II RI/FS Work Plan Addendum, submitted by Warzyn Engineering Inc. for the RI activities at the American Chemical Services (ACS) NPL site. With this letter, I am approving the Work Plan addendum for Phase II with reference to the previously approved RI/FS Work Plan and the conditions provided as an enclosure to this letter.

In general, the conditions prescribed in the enclosure are the result of my original Phase II proposals sent to you October 17, 1989, and the meeting held to discuss those proposals on October 31, 1989. The conditions are presented in the format of condition/discussion. The purpose of this format is to list the condition, and then supply the justification for its inclusion.

With reference to the proposed Phase II field work schedule which we have previously discussed, the conditions in their present form should not preclude Warzyn from conducting the primary activities on that schedule. These primary activities include the drilling of the lower aquifer monitor wells, the field screening exercises and the placement of the upper aquifer monitoring wells. These activities may proceed, provided that the QAPP Addendum has been approved.

U.S. EPA strongly believes that incorporation of all of the conditions listed in the enclosure are necessary for the overall quality of the RI for the site. I hope that you and the steering committee also believe that the enclosed conditions are necessary for a successful RI/FS. (However, for any of the enclosed conditions that you may dispute, you may at your discretion exercise your rights under Paragraph XX (Dispute Resolution) of the RI/FS Consent Order. However, unless a compelling argument in favor of your position is presented for any dispute you may bring concerning any of the enclosed conditions, it is unlikely that U.S. EPA will modify any of the conditions presented in this letter. (Additionally, the entrance into a dispute may also tend to delay the project, thus placing the signatories to the Consent Order in jeopardy of being assessed stipulated penalties.)

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If you have any questions concerning this letter or the enclosed conditions, please contact me at (312) 886-5116.

Sincerely,

Robert E. Swale  
Remedial Project Manager

cc: Andrew Perellis, Esquire  
Thomas Giller, Esquire  
Reginald Baker, IDEM

bcc: Steve Siegal, ORC  
Kerry Street, RERB

PHASE II WORK PLAN ADDENDUM COMMENTS  
AMERICAN CHEMICAL SERVICES SITE  
GRIFFITH, INDIANA

1. Groundwater and Surface Water Flow Direction (Paragraph 2)

CONDITION: Prior to the collection of the abridged set of water level measurements, the exact location and number of individual monitoring points will be subject to U.S. EPA approval. Additionally, if during the course of RI activities an abridged set of water levels are taken which reveals a significant variation in the expected configuration of the water table, then another full round of water level measurements shall be immediately performed. Any additional measurements in excess of the two full round measurements scheduled for December/January or March/April shall not substitute for any previously scheduled full rounds of water level measurements unless it is approved by the RPM.

DISCUSSION: The current version of the supplemental work plan merely states that 8-12 of the piezometers, monitoring wells, and staff gauges will be selected to represent an abridged set of water level measurement data points. The purpose of the taking the abridged set of water levels is to observe the changes which occur in the flow direction of the groundwater table during the ensuing year. Although it is expected that the actual flow direction will not change significantly, the measurements are expected to add to the database significantly and show the range of stresses that occur in the aquifer over the rest of the year. The purpose of the previous condition is not to dispute the projection that 8-12 measurements may be sufficient to adequately measure any changes or stresses in the aquifer system, it is merely requiring that the RPM be informed of the exact number and location of each measurement point so that agreement can be reached on an agreeable approach to the exercise, ~~to~~ to prevent duplication of effort. The second requirement is designed to avoid missing critical information which can only be obtained if the entire water table configuration is measured.

2. (Paragraph 4, Page 3)

CONDITION: Prior to selecting a numerical groundwater model, use of the particular model shall be subject to the approval of the RPM. The RPM will also be provided with the basis for selection of the model, the assumptions that must be made with regard to the parameters used in the model, the expected precision of the model in emulating the natural conditions at the site, and the method of data collection which is expected to be used to verify the models usefulness for the site.

DISCUSSION: This requirement is designed to allow the RPM the opportunity to utilize the model and allow the RPM to comment on the model's reliability for use as a decision making tool. The approval of the particular model is required so to allow for the RPM's input into the selection of the most appropriate model for the site, the selection of variables and assumptions, and the method of field comparisons used to

verify the usefulness of the model for predicting site conditions.

3. ✓ Contaminant Plume Delineation (Paragraph)

CONDITION: U.S. EPA is requiring that at least five aquitard matrix samples of the clay layer be taken from areas underneath the most concentrated areas, within the interior of the upper aquifer plume. The clay layer sample will be taken with a split spoon or Shelby tube sampling device, and submitted for full TCL and TAL analyses. The drilling technique used shall take special care not to cross-contaminate the clay sample with contamination from the upper aquifer and to avoid contamination of the clay layer with groundwater from the upper aquifer. Clay layer aquitard matrix samples shall be taken from differing depths in the clay layer to assess the degree of downward migration of contamination (if any) in the clay aquitard.

DISCUSSION: In the October 17th Phase II RI proposals, U.S. EPA requested the placement of monitor wells into the clay unit lying between the Calumet and Valporaiso aquifers. During the meeting held to discuss the Phase II proposals representatives from Warzyn engineering warned of the problems associated with the installation of monitor wells in the clay layer underlying the site. These opinions were discussed and are generally agreeable. However, the chemical characterization of the clay layer underlying the site is crucial to understanding the contaminant characterization of the site; for determining the type of remedial alternatives which are appropriate for the groundwater system; and for evaluating the risk that the site will pose to the usefulness of the lower aquifer over the long term. The reasons for establishing the existence of contamination in the clay layer is based upon the assumption that any contamination which would enter the clay layer could, depending upon the vertical characteristics of groundwater flow, migrate downward through the clay layer and potentially contaminate the lower aquifer underlying the site. Contamination in the clay layer would increase the risk of contamination to the lower aquifer system, which in turn may eventually have to be monitored as part of any long term monitoring program for the site. This argument is backed by Freeze & Cherry "Groundwater" 1979, Page 332 stating: "In many aquifer-aquitard systems, the aquitards provide the water and the aquifers transmit it to the wells. It is thus of considerable interest to be able to predict the response of aquitards as well as aquifers." Accordingly, if contamination were to exist in the clay layer underlying the sources of contamination in the upper aquifer, the expected vertical migration of contaminants through the clay layer would be expected to eventually contaminate the lower aquifer. Any future production wells placed in the lower aquifer would also increase the risk of extracting contaminated water from the clay unit by accelerating the movement of contaminants out of the clay layer, thus adding to the long term risks associated with the site. The actual collection of the aquitard matrix samples is not anticipated to occur until the collection of aquifer matrix samples from the upper aquifer and following the installation of the lower aquifer wells. The data collected from the installation of the lower aquifer wells should provide sufficient information regarding the thickness of the clay layer which in turn will provide useful information regarding the greatest depth to which aquitard

sampling can safely penetrate the clay layer.

4. Contaminant Plume Delineation (Paragraphs 1 & 4)

CONDITION: The installation of additional monitor wells and the collection of additional aquifer/aquitard matrix samples will be completed as ordered by the RPM in the field. Any requested modification in the field would fall under the jurisdiction of Paragraph XII Modifications in the RI/FS Consent Order.

DISCUSSION: In the approved Work Plan for the ACS site on page 4-19, it states the following in the first paragraph under Section 4.4.1 "Based upon the results of the work conducted during task 2 and 3, it is anticipated that at least 8 and up to 12 new monitoring wells will be installed in task 4. Although the need for, the location, and the number of second phase wells is currently unknown, 4 phase II wells will penetrate to the top of the lower aquifer and at least 4 and up to 8 of the wells would be additional shallow wells." In the current version of the Supplemental Work Plan provided by Warzyn Engineering Inc., it seems that a maximum number of 8 monitor wells has been selected for placement into the shallow aquifer regardless of whether the screening method or the inherent site uncertainty dictates the need for additional wells in the shallow zone. Although it is anticipated that the number of upper aquifer wells will not exceed 8, flexibility in the field is required and the collection of additional upper and lower aquifer wells, aquifer matrix, and aquitard matrix samples may be necessary.

5. Contaminant Plume Delineation (Groundwater Sampling Par. 2)

CONDITION: For the 6 Phase I monitor wells, the full TCL and TAL parameter lists will be maintained for round 2 sampling of those wells. In addition, groundwater quality and chemistry parameters (e.g., chloride, ammonia, phosphate, etc.) will be included in this sampling round. (see condition 9 below)

*Reduced by who?*  
DISCUSSION: In the approved Work Plan, it is generally stated that parameter lists may be reduced for subsequent rounds of sampling based upon results found in the first round of sampling. In this case, the hazardous substance parameter list was reduced to include only the TCL volatile and semi-volatile organic compounds. This approach would have been acceptable if a significant quantity of PCBs had not been found in MW-04. Since PCBs do not normally enter the groundwater system without the benefit of a carrier solvent, it is not in the best interest of the investigation to exclude the analyses of PCBs for wells in which it had been previously found. The exclusion of metals and groundwater quality parameters are not acceptable due to the need for this data in the eventual design of any groundwater treatment systems proposed for the site.

6. Delineation of Surface Water Sediment Contamination (paragraph)

CONDITION: Warzyn shall provide for the procurement of at least 5

sediment samples in the wetland area directly west of the ACS site and for an additional minimum of 5 sediment samples from the drainage ditch and wetland, south and west of the ACS site and City of Griffith landfill respectively. The exact location of these sampling points shall be decided prior to and during field sampling, but generally shall use the sampling area identified west of the ACS facility and an expanded area (which is to follow the drainage pattern) south of the ACS site.

DISCUSSION: With reference to the data summary included with the Technical Memoranda submitted December 4, 1989, it is the opinion of U.S. EPA that an insufficient amount of data has been collected from these two areas to adequately draw conclusions concerning the degree of contamination in the wetland and surface water sediments. The data which has been presented, shows that a variety of hazardous substances both naturally occurring and non-naturally occurring, either exist in these samples or in the case of naturally occurring substances, are concentrated in excess of the normal range expected for these substances. In order to adequately delineate the extent of contamination in these sediments, a grid containing a sufficient number of samples must be constructed to aid in delineating the degree of contamination in these areas. The size and relative direction of the sampling grids will be based upon past aerial photography, the data collected in Phase I, and mutual agreement between the PRPs and EPA's project coordinators.

#### 7. Wetlands Delineation

A meeting shall be scheduled in February 1990 to discuss the objectives and necessary procedures for conducting a Wetlands Delineation for the ACS site. Warzyn shall invite a professional who routinely performs wetland delineations to attend the meeting. Members of the U.S. EPA, U.S. Fish and Wildlife Service and the U.S. Army Corps of Engineers are expected to attend the meeting. The formal date for the meeting will be decided by the steering committee's project coordinator and the U.S. EPA RPM.

#### 8. Figure 1

CONDITION: The shaded area shall be modified to include the interior portions of the ACS property and also shall extend in a counter-clockwise fashion to include the area south of the ACS operating facility and north and west of the off-site containment area.

DISCUSSION: According to the discussion included under the heading of Contaminant Plume Delineation, it appeared that the described screening method would be used to describe the interior portions of the contaminant plume. However, figure 1 does not seem to include the interior portions of the ACS facility which is believed to contain significant groundwater source areas. Additionally, the portion of the site north and west of the off-site containment area and south of the ACS operating facility were previously identified during the U.S. EPA site investigation to be highly contaminated with a variety of hazardous substances. Many of the hazardous substances which were identified in the EPA site investigation (e.g., vinyl chloride, and trichloroethylene), were not identified in the groundwater samples obtained during the Phase I investigation. Therefore

this area should be screened, and depending upon the results of the screening, aquifer and aquitard matrix samples and possibly monitor wells should be placed, or if appropriate, waste samples collected from this area.

9. QAPP Addendum, Table 1

CONDITION: Laboratory Parameters for the Phase I Monitoring Wells Round 2, shall include analyses for PCBs/Pesticides, TAL metals and cyanides, chloride, alkalinity and sulfate, ammonia, nitrate-nitrite, TOC, COD and TDS (see Condition 5 above).

DISCUSSION: It is unclear from the graph whether or not these parameters will be analyzed in the Phase I-Round 2 groundwater sampling scheme. As discussed in condition 5 above, PCBs must be included due to their presence in MW-04, following the Phase I-Round 1 sampling. The other parameters also must be analyzed in round 2 to assess the groundwater chemistry in these contaminated areas and provide a basis for adequate groundwater decision making.